

CLAIMS

What is claimed is:

1. A multi-port valve device which can operate in a plurality of predetermined positions which include at least one position that will allow unobstructed flow of a fluid and movement of line-clearing devices selected from the group consisting of pigs, spheres, scrapers, swabs, squeegees, cylinders, and balls through said device, and at least one alternate position which will divert flow of a fluid through said device to a branch port and simultaneously present an in-line barrier to control the movement of a said line-clearing devices comprising;
 - a) a multi-port valve body with at least three ports in the same plane;
 - b) a rotating core member to control flow direction through said valve body comprising;
at least one unobstructed flow path through said member and at least one branch flow path through said member which can divert flow of a fluid through said member and incorporates a partial obstruction to control the movement of said line-clearing devices; and
 - c) a means to rotate said core member about an axis perpendicular to said plane whereby said paths through said core member can be made to align with predetermined ports of said valve body.
2. A device according to claim 1 wherein said rotating core member is a ball element from a full-port two-way ball valve, which has been custom-machined to include a plurality of holes, appropriately sized and disposed, to create said branch path incorporating said partial obstruction.

3. A device according to claim 1 wherein said partial obstruction in the branch flow path is made by installing a physical barrier inside the branch port of a commercially available T-port ball element.
4. A device according to claim 3 wherein said barrier is a steel rod of suitable diameter welded inside and across the diameter of said branch port, such that the outermost surface of the rod is flush with the outside diameter of the ball.
5. A device according to claim 3 wherein said barrier is a steel bar, of suitable dimension, welded inside and across the diameter of said branch port, and shaped such that the outside surface along the length of said bar is curved to match the outside radius of said ball, and welded in place such that the curved surface of said bar forms a continuation of the surface of said ball across the diameter of said branch port.
6. A device according to claim 1 wherein said rotating core member is of a plug or cylindrical shape.
7. A device according to claim 1 wherein said rotating core member can rotate 90 degrees to allow flow from a branch port to and from the upstream section of the main line or 180 degrees to allow flow from the branch to and from either the upstream or downstream portions of the main line.
8. A device according to claim 1 wherein the means to rotate said core member is shaft connected to a manual lever.
9. A device according to claim 1 wherein the means to rotate said core member is shaft connected to a powered valve actuator.